Nov. 30, 1954 L. TER MAAT 2,695,413

VENTILATING DEVICE FOR BEDS

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Fig. 1.

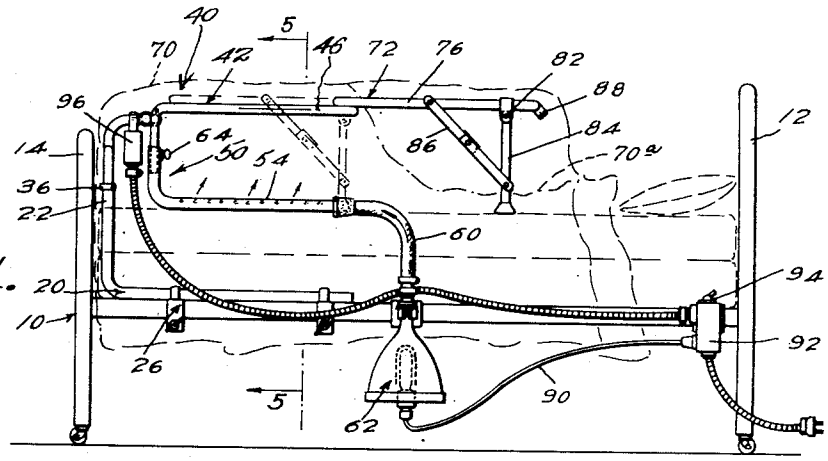


Fig. 8.

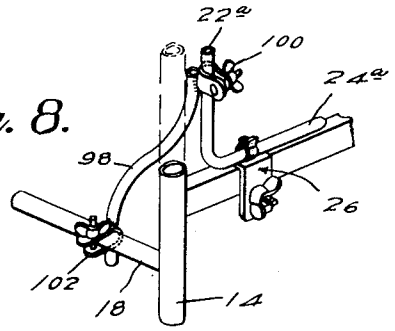
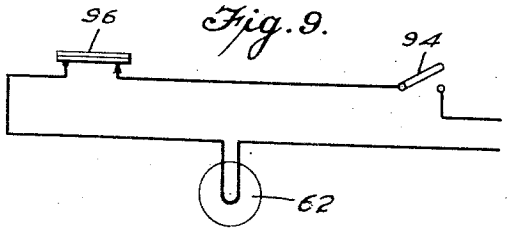


Fig. 2.

Fig. 9.



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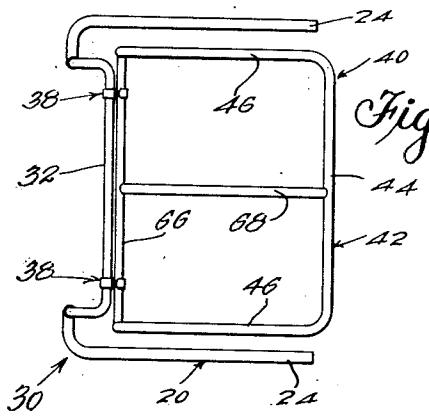


Fig. 3.

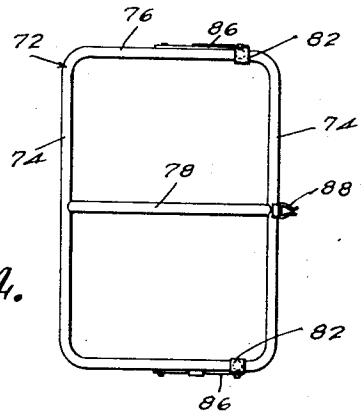


Fig. 4.

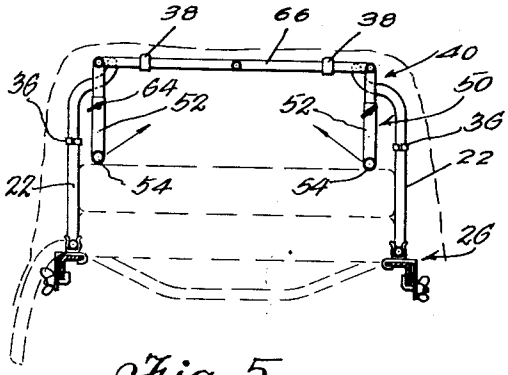


Fig. 5.

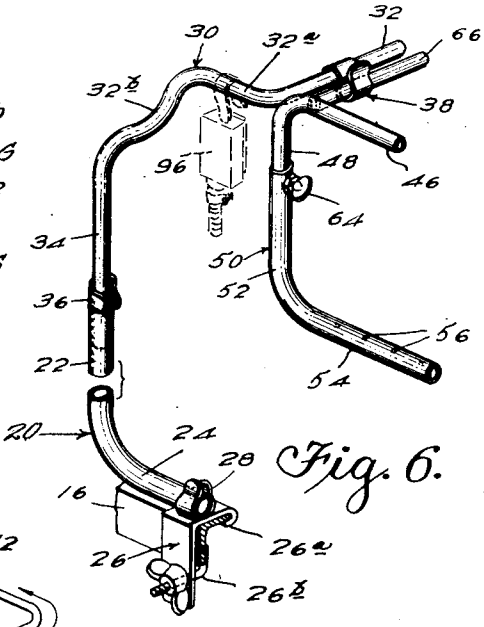


Fig. 6.

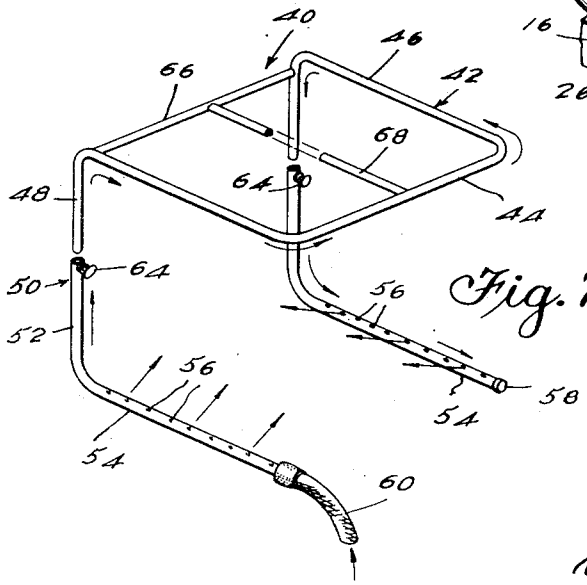


Fig. 7.

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VENTILATING DEVICE FOR BEDS

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Application April 8, 1952, Serial No. 281,067

2 Claims. (Cl. 5—319)

This invention relates generally to the class of beds and is directed particularly to improvements in apparatus for use in association with a bed structure for improving the comfort of an occupant of the bed.

A principal object of the present invention is to provide, in a manner as hereinafter set forth, an improved bed attached apparatus for improving the comfort of an occupant of the bed by relieving such occupant of the weight of the bed clothing and by maintaining a circulation of air of controlled temperature beneath the bed clothes.

Another object of the invention is to provide a ventilating apparatus for a bed, as hereinafter more particularly set forth, wherein air circulation is effected and maintained by convection and the heat of such currents maintained at a desired even temperature by thermostatic control.

A still further object of the invention is to provide an apparatus of the above described character, which is adapted to be applied to any type of bed without having to alter in any manner the construction of the bed and which is also so designed that it may be easily and quickly adjusted so that the bed clothes supporting frames can be placed in an out-of-the-way position to facilitate changing the bedding or when the apparatus is not desired for use.

Other objects and advantages of the invention will become apparent as the description of the same proceeds and the invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming a part of the specification, with the understanding, however, that the invention is not to be limited to the exact details of construction shown and described since obvious modifications will occur to a person skilled in the art.

In the drawings:

Figure 1 is a view in side elevation of a bed frame showing mounted in position on the side rails thereof, apparatus constructed in accordance with the preferred embodiment of the present invention, the mattress, springs and bed clothing being represented in broken lines with the bed clothing supporting frames in operative position.

Figure 2 is a view corresponding to Figure 1 but showing the bed clothing supporting frames thrown back into inoperative position.

Figure 3 is a view in top plan of the base frame and the bed clothing supporting frame which is hingedly attached thereto.

Figure 4 is a view in top plan of the auxiliary bed clothing supporting frame.

Figure 5 is a sectional view taken transversely of the structure substantially on the line 5—5 of Figure 1.

Figure 6 is a view in perspective, on an enlarged scale, of a portion of one side of the base frame and bed clothing supporting frame, showing details of construction, portions being broken away.

Figure 7 is a view in perspective of the bed clothing supporting frame illustrating the air circulating paths therethrough and therefrom.

Figure 8 is a view in perspective of a portion of one side of the base frame showing an alternative method of securing the latter to the bed frame.

Figure 9 illustrates the circuit diagram for the heat lamp, switch and control thermostat.

Referring now more particularly to the drawings, the

numeral 10 generally designates a bed of conventional type, comprising the head and foot sections 12 and 14 respectively and the side rails 16 connecting the head and foot sections in the conventional manner.

Figure 8 illustrates at 18 a portion of a cross bar connecting the sides of the foot portion 14, the structure shown in this figure being hereinafter more fully described.

In accordance with the present invention there is provided what will be defined as a base frame which is generally designated 20 and which comprises two spaced upright tubular posts 22 each of which is connected with a right angularly extending arm 24, at its lower end, which is designed to rest upon or be supported by a side rail 16 of the bed frame as illustrated in Figures 1 and 2. For the purpose of maintaining the arms 24 in position there are provided right angle clamp brackets 26, one angle of which extends across the top of the rail 16 and is turned back as indicated at 26a to engage the inner side of the rail 16 as shown in Figure 6, while the other angle extends downwardly below the side of the rail 16 and carries an L-bolt 26b which engages the side of the rail 16 and secures the clamp bracket 26 in position.

Upon the top of the horizontal portion of the clamp bracket 26, which is the portion carrying the turned back edge 26a, is fixed, by welding or in any other suitable manner, an upwardly opening spring clip 28 in which the arm 24 is frictionally engaged.

In addition to the parts thus far described, the base frame also includes an arch portion generally designated 30 and comprising the horizontal rail 32 having the rearwardly and downwardly extending end terminal portions 32a and 32b, the latter portion curving into the upper end of a leg portion 34 which has telescopic engagement in the upper end of a tubular post 22 as shown most clearly in Figure 6.

A spring clamp 36 engaging about each leg 34 engages the top end of the adjacent post 22 to limit the downward movement of the leg 32 into the post 22 and by positioning this clamp 36 as desired, by sliding it up or down on the leg 34, the vertical adjustment of the arch 30 can be regulated.

It will, of course, be understood that in referring to the base frame, such reference will include the arch frame 30 and the posts and arms 22 and 24.

The base frame 20 has pivotally or hingedly connected to the cross rail 32 of the arch, by means of spring hinge clips 38, the bed clothing supporting frame structure which is generally designated 40 and which is shown in perspective in Figure 7.

The frame structure 40 comprises a substantially U-shaped yoke 42 which includes a transverse portion 44 and the spaced parallel side arms 46, each of which terminates in the right angle extensions 48. Each of these extensions comprises one portion of a two-part extensible post which is generally designated 50, the other part of such post comprising the right angular extension 52 of an air distributing tube 54 which is provided with a plurality of air discharge apertures 56. One of these tubes has its free end closed as indicated at 58, while the other end remains open for the attachment thereto of a flexible air conducting tube or hose 60 which is connected with and leads from an air heater, shown in Figures 1 and 2 and generally designated 62.

The portions 48 are slidably extended into the portions 52 of the posts 50 and are adjustably held by set screws 64 and the top part 42 of the bed clothing frame is of tubular construction so that heated air entering by way of the tube 60 will flow through the tube 54 to which the tube 60 is attached, up through the adjacent post 50 and around through the U-shaped structure 42 into the opposite post 50 and down into the opposite tube 54 for discharge through the apertures thereof.

Connecting between the portions 48 is a brace rod 66 and this rod is connected at its center portion with the center of the transverse part 44 of the structure 42, by the rod 68. These latter rods not only give rigidity to the structure but serve to prevent the bed clothing, which is shown in outline in Figures 1 and 2 and desig-

nated 70, from sagging through the supporting frame as will be readily apparent.

As is readily apparent from Figures 3 and 5 the bed clothing supporting frame is of less width than the base frame 20 so that when the clothing supporting frame is in horizontal position for use as shown in Figure 1 the air outlet tubes 54 will rest upon the mattress at and parallel with the sides thereof while the top portion 42 will be elevated, by the posts 50, to the desired position above the person occupying the bed so that the bed clothing 70 will be maintained in desired position to permit free circulation of air therebeneath.

The overall length of the bed clothing supporting frame structure 40 may be approximately half the length of the bed or slightly less and when used alone it will serve to support the bed clothing from the lower part of the occupant of the bed.

If it is desired to support the bed clothing entirely from the occupant, except around the neck, use may be made of the auxiliary bed clothing supporting frame shown particularly in Figure 4 and generally designated 72. This auxiliary frame 72 preferably is of rectangular form and comprises the spaced parallel cross bars 74 and the parallel side bars 76 connecting the ends of the cross bars, together with a central brace bar 78 between the middle portions of the cross bars 74.

The side bars 76 overlie the sides 46 of the top portion 42 of the main clothing supporting frame and rest upon the sides 46 of the structure 42 so that the auxiliary frame can be slid rearwardly on the structure 42, or forwardly, as desired or so that it may be entirely removed and placed in an out-of-the-way position as illustrated in Figure 2 when it is necessary or desirable to place the structure in a thrown back position. For securing the auxiliary frame to the frame 42 in the manner illustrated the front bar 74 of the auxiliary frame has, secured thereto, centrally of its ends, a spring clip 88 which is engaged about the center bar 68 of the frame 42.

Pivotally attached to the side bars 76 of the auxiliary frame 72 by a suitable means as indicated at 82, are supporting legs 84 which may be secured in operative extended position by the two-part brace arms 86 connected between the lower ends of the legs 84 and the adjacent side bars 76. These brace arms when extended maintain the legs 84 in right angular relation with the side bars 76 in an obvious manner.

The heating unit 62 has electric current conveyed thereto through the cord 90 leading from a switch box 92 which has a control switch 94 conveniently located for the person occupying the bed to turn on or off the current for the heater.

The current supply to the heater is also under the automatic control of a thermostat unit 96 which may be suspended beneath the bed clothing from the arch 30 as shown in Figures 1 and 2 and as indicated in broken lines in Figure 6.

No details of construction have been illustrated in connection with the switch box 92, the switch 94 and the thermostat control 96 since these are made up of standard electrical units and form no part of the present invention in themselves, but Figure 9 illustrates a simple circuit arrangement for these units.

The heating unit 62 may be mounted in any suitable manner on the bed side frame 16 as illustrated or it may be located in any other suitable position.

In Figures 1 and 2 the side arms 24 of the base frame have been shown as secured in place by two clamp units 26 for each arm. In Figure 8, however, a modified construction is illustrated where one clamp unit 26 is applied to a shortened arm 24*a* and the post portion of the arm is braced by the curved leg 98, one end of which is secured to a clamp 100 which is mounted on the adjacent post 22*a* while the other end of the leg 98 is secured to a clamp 102 which is mounted upon the bed cross rail 18 as illustrated.

In Figure 1 where the structure is shown in operative position the bed clothing supporting frame 40 is shown as having connected therewith and extended forwardly therefrom, the auxiliary frame 72, the latter being supported by the extended legs 84. Thus the bed clothing is supported above the entire body of the occupant of the bed. As previously stated the auxiliary frame can be shifted rearwardly so that the upper half of the bed clothing will hang down from the front end of the main frame 40, as indicated at 70*a*. The auxiliary frame is here illustrated in broken lines in its rearward position.

It will be seen from the foregoing that there is provided by the present invention a novel and very useful attachment to a bed structure particularly where it may be desirable for reasons of health or comfort, either for a healthy person or for a sick person, to keep the weight of the bed clothes from the body of the occupant of the bed and also to supply to the occupant a circulating air movement of constant temperature.

I claim:

1. In a ventilating device for beds, a tubular base frame having side portions of substantially L-form with the top ends of the vertical legs spacedly connected so that the frame may straddle the foot portion of the bed and the horizontal legs may extend rearwardly from adjacent the foot-board along the tops of the side rails of the bed, clamp means for securing said horizontal legs to said side rails, a bed clothes supporting frame having side portions each comprising a lower substantially L-shaped portion and an upper inverted substantially L-shaped portion, the vertical legs of said lower portions being telescopically engaged by the like legs of said upper portions, means for adjustably securing the latter legs engaged, hinge means between the top ends of the vertical legs of the first frame and the angles of bend of the upper portions of the second frame, the lower portions of the latter's side portions being formed of lengths of tubing and having the top side of one of the horizontal legs thereof apertured for the discharge of air therethrough, and an air intake tube connected with the free end of the said apertured leg.

2. The device as defined in claim 1, with a heater for the air, in the form of a substantially conical casing adapted to be suspended from a side rail of the bed and open at its upper and lower ends, said intake tube leading from the upper end of said casing to the said apertured leg, and an electric heating element centered within said casing to heat the air entering the lower end of the latter.

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